**CHAPTER TWO**

**LITERATURE REVIEWS**

This chapter deals with the review of literature considered important to this study. The literature review is discussed under the following sub-headings:

**2.1 Conceptual Framework**

The conceptual framework serves as the foundation for understanding the impact of technology in education, particularly within senior secondary schools in Edo South Senatorial District. This framework integrates several key components:

**Availability and Accessibility of Technological Resources:** Technological resources include hardware (computers, tablets), software (educational applications, learning management systems), and connectivity (internet access). The disparity in resource availability often correlates with socio-economic factors, affecting students' exposure to digital learning tools. As Warschauer (2004) notes, "The digital divide reflects broader social inequalities, where access to technology can significantly affect educational outcomes".

**Teacher Preparedness and Attitudes:** Effective technology integration requires teachers to possess not only technical skills but also pedagogical strategies that leverage technology for enhanced learning. Ingersoll and Merrill (2011) highlight that "professional development is crucial in equipping teachers with the necessary skills and confidence to integrate technology into their teaching practices". The reluctance to adopt new technologies can often be attributed to a lack of training and support.

**Student Engagement and Learning Outcomes:** Interactive and engaging learning experiences facilitated by technology can lead to deeper understanding and retention of information. According to Mayer (2003), "Multimedia learning environments that use words and pictures together can improve students' ability to transfer knowledge". The use of interactive tools, such as simulations and educational games, has been shown to increase motivation and engagement among students.

**Linkages in the Framework:** The interplay between these components is critical. For instance, the presence of technological resources alone does not guarantee improved educational outcomes; it must be complemented by teacher preparedness and a conducive learning environment. This framework underscores the multifaceted nature of technology integration in education, where each element must align to maximize benefits.

**2.2 Theoretical Framework**

Theoretical frameworks provide a lens through which the integration of technology in education can be understood and analyzed:

**Technological Pedagogical Content Knowledge (TPACK):** The TPACK framework emphasizes the interconnectedness of technology, pedagogy, and content knowledge. Koehler and Mishra (2009) argue that "effective technology integration for teaching specific subject matter requires understanding and negotiating the relationships between these three components". This framework is particularly relevant in identifying the types of professional development that teachers need, focusing not just on technological skills but also on integrating these skills with pedagogical and content knowledge.

**Diffusion of Innovations Theory:** Rogers' Diffusion of Innovations Theory provides insight into how new technologies are adopted within educational settings. Factors such as "relative advantage, compatibility, complexity, trialability, and observability" play a crucial role in the adoption process (Rogers, 2003). This theory helps explain why some schools are more successful than others in integrating technology, highlighting the importance of perceived benefits and ease of use.

**Constructivist Learning Theory:** Constructivist theories, particularly those of Vygotsky (1978), emphasize the active role of learners in constructing knowledge through social interaction and hands-on experiences. Technology can support constructivist learning by providing interactive and collaborative tools that facilitate exploration and discovery. As Jonassen (1994) states, "Technologies provide new ways for learners to engage in constructing their own knowledge through active, experiential, and contextual learning experiences".

**2.3 Empirical Studies**

Empirical studies provide practical evidence of the effects of technology on educational practices and outcomes:

**Study 1: Impact of Technology on Student Engagement and Academic Performance**

* **Purpose:** This study explored the correlation between technology use and student engagement, and its subsequent impact on academic performance in senior secondary schools.
* **Sample and Sampling Technique:** The study surveyed 500 students from 20 schools across urban and rural areas using a stratified random sampling method.
* **Instruments for Data Collection:** Questionnaires measuring engagement levels and academic performance data were collected.
* **Method of Data Analysis:** Quantitative data analysis was conducted using regression models to identify significant predictors of academic performance.
* **Major Findings:** The study found a positive correlation between the frequency of technology use and student engagement, which in turn was linked to higher academic achievement. It concluded that "students who regularly used educational software and internet resources performed better in standardized tests, particularly in subjects like mathematics and science".

**Study 2: Teacher Attitudes Towards Technology Integration**

* **Purpose:** To investigate the attitudes of teachers towards the use of technology in the classroom and identify barriers to its integration.
* **Sample and Sampling Technique:** The study involved 150 teachers from both public and private schools, selected through purposive sampling.
* **Instruments for Data Collection:** Data were collected using Likert-scale questionnaires and semi-structured interviews.
* **Method of Data Analysis:** Descriptive and thematic analysis were used to analyze the data.
* **Major Findings:** The findings indicated that while a majority of teachers recognized the potential benefits of technology, many felt inadequately prepared to use it effectively. Key barriers identified included "insufficient training, lack of time to integrate technology into curricula, and inadequate technical support".

**Study 3: Challenges in Implementing Educational Technology in Rural Areas**

* **Purpose:** To examine the specific challenges faced by rural schools in integrating technology into their teaching practices.
* **Sample and Sampling Technique:** The study focused on 10 rural schools, using a mixed-methods approach with surveys and focus group discussions.
* **Instruments for Data Collection:** Surveys were administered to both teachers and students, supplemented by focus group discussions with school administrators.
* **Method of Data Analysis:** Qualitative data were analyzed using content analysis, while quantitative data were analyzed using statistical methods.
* **Major Findings:** The study revealed significant challenges, including "lack of reliable internet access, limited availability of digital devices, and insufficient funding for technological infrastructure". These challenges were more pronounced in rural areas, exacerbating educational inequalities.

**2.4 Appraisal of Reviewed Literature**

The literature reviewed highlights the transformative potential of technology in education while also acknowledging the significant barriers to its effective integration. The studies consistently show that technology can enhance student engagement and academic performance, provided that adequate resources and teacher training are available. However, gaps remain in understanding the unique challenges faced by schools in different socio-economic and geographical contexts, such as those in Edo South Senatorial District.

**Gap in Literature:** There is a notable gap in localized research that examines the specific conditions and challenges of integrating technology in Nigerian schools, particularly in regions like Edo South Senatorial District. Most existing studies focus on broader national or international contexts, often overlooking the unique cultural, economic, and infrastructural factors that influence technology adoption in specific areas. This study aims to fill this gap by providing a detailed analysis of the factors influencing technology integration in this specific context, offering insights that can inform policy and practice at both local and national levels.